

Arctic Ocean Model Intercomparison Project (AOMIP): Travel Support for Workshops

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Award Number: N00014-09-1-0397

<http://www.whoi.edu/page.do?pid=29836>

LONG-TERM GOALS

Our long-term goal is to improve arctic sea ice – ocean numerical models by fostering communication and collaboration among the international modeling community.

OBJECTIVES

The specific objective of this project is to fund travel to AOMIP workshops by scientists who are new to the field (e.g, graduate students and post-docs), with additional funding for use by Navy modelers and by other key senior modelers who provide insight for the younger scientists.

APPROACH

PI Steele works closely with AOMIP PI Andrey Proshutinsky (WHOI) to organize workshops, including time for talks on current research, break-out sessions, review talks designed to assess the current state of the field, and social activities.

WORK COMPLETED

The first AOMIP workshop to use ONR funding took place at WHOI October 20-23, 2009. Forty two scientists came to WHOI from the US, Canada, France, Germany, Sweden, Russia, Poland, and England. An additional dozen local WHOI scientists participated in discussions during the week. There were 44 talks and 11 posters presented. Talks were grouped according to the following themes:

- Freshwater
- Sea ice
- Model progress and results
- Observations and methods
- Water masses: straits and ecosystems
- Atlantic and Pacific water dynamics

The first day of the meeting was designated as the first-ever “AOMIP School for Young Scientists” where 6 invited overview talks were presented, with plenty of time left for questions and discussions. These talks were:

Report Documentation Page				Form Approved OMB No. 0704-0188	
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1. REPORT DATE 2009		2. REPORT TYPE		3. DATES COVERED 00-00-2009 to 00-00-2009	
4. TITLE AND SUBTITLE Arctic Ocean Model Intercomparison Project (AOMIP): Travel Support for Workshops				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) University of Washington, Applied Physics Laboratory, 1013 NE 40th St, Seattle, WA, 98105				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 3	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

- Elizabeth Hunke (LANL): Sea ice modeling and challenges for the future
- Luc Rainville (APL/UW): Mixing in the arctic seas
- Axel Schweiger (APL/UW): Atmospheric forcing data and surface air temperature
- Katya Popova (NOC, Southampton): Ecosystem modeling overview
- Mike Steele (APL/UW): Arctic Ocean freshwater: past, present, and future
- Andrey Proshutinsky (WHOI): Wind-forced dynamics of the Arctic Ocean

We also arranged a 1 hour tour of the WHOI engineering facility, and organized an evening dinner meeting where senior scientists gave more details on emerging “hot topics” in the field and the young scientists had time to introduce themselves and speak about their concerns as they begin their careers.

This ONR grant supported the travel for 16 scientists:

- Luc Rainville (APL/UW): speaker for “AOMIP school”
- Axel Schweiger (APL/UW): speaker for “AOMIP school”
- Guoping Gao (UMASSD): grad student
- Zhigang Lai (UMASSD): postdoc
- An Nguyen (JPL): postdoc
- Sinead Farrell (NOAA): postdoc
- James Reagan (UMD): grad student
- Jackie Clement-Kinney (NPS): grad student
- Robert Osinski (NPS): postdoc
- Veronique Dansereau (McGill): grad student
- Alexandra Jahn (McGill): grad student
- J-P Paquin (UQuebec): grad student
- Zeliang Wang (BIO): new to arctic modeling
- Maria Luneva (POL): new to arctic modeling
- Per Pemberton (SMHI): new to arctic modeling
- Bill Hibler (IARC): senior scientist

All supported scientists gave talks or posters. I also used this grant funding to encourage participation of NRL modelers. Rick Allard from Stennis, Mississippi was able to attend.

On the last day of the meeting, break-out groups discussed coordinated experiments that will be conducted over the coming year, including model intercomparisons of Bering Strait inflows, freshwater outflows, halocline water formation, the role of eddy transport, idealized wind-driven simulations, ecosystem forcings, mixed layer depth, and Beaufort Gyre dynamics. Most of these include the active participation of young scientists.

RESULTS

A main result of this workshop is that younger modelers and those new to the field have gained an invaluable insight into the state-of-the-art. Dr. Proshutinsky and I were told by many participants during the course of the meeting that the AOMIP School in particular was very useful to them, giving us encouragement to continue this activity. We were also told by several senior, “new-to-the-field” scientists that our meeting was unusually open to new ideas and new people, in comparison with other oceanographic focus groups that they have participated in. Dr. Allard from NRL was very positive about his experience.

A significant result from this workshop is an ongoing effort to perform coordinated model experiments to better understand model deficiencies and how to correct them. These projects are ongoing, but we are planning to impose a more firm deadline by planning a special AOMIP issue of JGR with submissions due in mid-late 2010.

For example, early results from the Bering Strait inflow intercomparison indicate that observed near-bottom data from moorings near Alaska cannot be extrapolated easily across the entire strait, as was the practice for many years. The models show significant lateral as well as vertical shear and scalar gradients. Thus one focus of this AOMIP activity will be to discover how best to use such sparse observations to more accurately determine fluxes in this strait. This activity is led by Jackie Clement-Kinney, a graduate student at NPS in Monterey.

IMPACT/APPLICATIONS

Potential future impact of AOMIP activities is the improvement of models and observation strategies. In particular, the future impact of exposing young and new-to-the-arctic scientists to the state-of-the-art in arctic modeling is an enhanced capability for more accurate modeling and scientific discovery.

RELATED PROJECTS

None